Claims

1. (Previously presented) A method of making a glucosamine composition comprising:

(a) providing a source of chitin-containing fungal biomass having cells with cell walls having proteins, lipids and/or polysaccharides therein;

(b) pretreating the chitin-containing fungal biomass with a first acidic solution comprising HCl at a concentration of from about 0.05 to about 20% to break down the cell walls of the fungal biomass and release proteins, lipids and/or polysaccharides therein, without converting a significant amount of chitin to glucosamine; and

(c) converting the chitin in remaining solid fungal biomass to glucosamine to form the glucosamine composition using a second acidic solution comprising HCl.

2. (Canceled without prejudice)

3. (Previously presented) The method of claim 1 wherein solid fungal biomass is separated from the proteins, lipids and/or polysaccharides after the pretreating and prior to converting the chitin in the remaining solid fungal biomass to glucosamine.

4. (Previously presented) The method of claim 2 wherein the first acidic solution comprises hydrochloric acid at a concentration of from about 0.5 to 12%.

5. (Previously presented) The method of claim 1 wherein the breaking down the cell walls of the fungal biomass comprises treating the fungal biomass at a temperature of from about 60°C to about reflux temperature of a mixture of the fungal biomass and first acidic solution.

6. (Previously presented) The method of claim 1 wherein the converting the chitin to glucosamine comprises reacting the chitin with a second acidic solution having a concentration of from about 5 to about 20%.

7. (Previously presented) The method of claim 1 wherein the converting the chitin to glucosamine comprises reacting the chitin with the HCl having a concentration of from about 1 to about 2%.

8. (Previously presented) The method of claim 1 wherein the first acidic solution has an acid concentration of less than about 20% and wherein the fungal biomass and first acidic solution are mixed at a reaction temperature of less than about 100°C for a reaction period of less than about 4 hours.

9. (Previously presented) The method of claim 1 wherein the fungal biomass is treated with an alkaline solution prior to breaking down of the cell walls with the first acidic solution.

10. (Previously presented) The method of claim 2 wherein the fungal biomass is treated mechanically to break down the cell walls prior to the pretreatment with the first acidic solution.

11. (Previously presented) The method of claim 1, wherein the converting step comprises utilizing HCl having a concentration of less than about 20%.

12. (Previously presented) The method of claim 1, wherein the converting step comprises reacting the chitin in the remaining solid fungal biomass with the second acidic solution comprising HCl at a temperature of at or about a reflux temperature of the remaining solid fungal biomass and second acidic solution mixture.

13. (Previously presented) The method of claim 1, wherein the first acidic solution has an acid concentration of less than about 5%.

14. (Previously presented) The method of claim 1, further comprising mixing the glucosamine composition with a dispersant and/or a binder to form a food supplement.

15. (Currently amended) A method of obtaining glucosamine from fungal biomass, the method comprising the steps of:

(a) providing a fungal biomass;

(b) pretreating the fungal biomass with an alkaline solution to break down cell walls of the fungal biomass and release proteins, lipids and/or polysaccharides therein, without converting a significant amount of chitin to glucosamine;

(c) reacting the fungal biomass in hydrochloric acid with an acid concentration and at a reaction temperature and for a reaction period sufficient to convert chitin in the fungal biomass to glucosamine; ~~and~~

(d) separating the glucosamine from the acidic solution; and

(e) forming the glucosamine into a food supplement.

16. (Previously presented) The method of claim 15 wherein the hydrochloric acid has a concentration of from about 5 to about 20%.

17. (Previously presented) The method of claim 15 wherein the reaction temperature is greater than about 80°C and is reacted for a period of at least 4 hours.

18. (Original) The method of claim 15 wherein the alkaline solution comprises sodium hydroxide at a concentration of from about 1 to about 4%.

19. (Previously presented) The method of claim 15, further comprising forming the glucosamine into a food supplement composition.

20. (Canceled without prejudice)

21. (Canceled without prejudice)

22. (Currently amended) A method of obtaining glucosamine from fungal biomass, the method comprising the steps of:

(a) providing a chitin-containing fungal biomass;

(b) reacting the fungal biomass in an acidic solution comprising HCl with an acid concentration of 9% to 20% and at a reaction temperature of from about 90°C to about 160°C and for a period sufficient for said reaction to convert at least about 50% of the chitin in the fungal biomass to glucosamine~~The method of claim 20~~ wherein the reacting of fungal biomass in an acidic solution is performed in a sealed container that allows pressure therein to increase as a result of the reaction; and

(c) separating the glucosamine from the acidic solution.

23. (Currently amended) The method of claim ~~20~~22 wherein the reaction temperature is from about 105°C or greater and the reaction takes place at a pressure of about 2 atmospheres or greater.

Claims 24-41 (Canceled without prejudice)

42. (Previously presented) A method of making a glucosamine composition comprising:

(a) providing a source of chitin-containing fungal biomass having cell walls containing proteins, lipids and/or polysaccharides therein;

(b) pretreating the biomass with an acidic solution comprising HCl at a temperature of from about 60°C to about reflux temperature of a mixture of the acidic solution and biomass to release the proteins, lipids and/or polysaccharides without converting a significant amount of chitin to glucosamine;

(c) converting the chitin in the fungal biomass to glucosamine after the pretreatment step; and

(d) wherein a commercial-scale amount of the glucosamine composition is produced.

43. (Currently amended) A method of making a glucosamine composition comprising:

(a) providing a source of chitin-containing fungal biomass having cell walls containing proteins, lipids and/or polysaccharides therein;

(b) pretreating the fungal biomass breaking down the cell walls of the fungal biomass and releasing the proteins, lipids and/or polysaccharides in liquid form without converting a significant amount of chitin to glucosamine utilizing one or more of the following pretreatments,

(i) pretreating the chitin-containing fungal biomass with a first acidic solution comprising HCl at a concentration of from about 0.05 to about 20% acid;

(ii) pretreating the chitin-containing fungal biomass with an alkaline solution prior to breaking down of the cell walls with the first acidic solution;

(iii) pretreating the fungal biomass mechanically to break down the cell walls prior to the pretreatment with the first acidic solution;

(c) separating solids from the proteins, lipids and/or polysaccharides in liquid form; and

(d) treating the separated solids with HCl to convert chitin therein to glucosamine and separating the glucosamine in a manner such that it is suitable for use in a food supplement.

Claims 44-48 (Canceled without prejudice)

49. (Currently amended) A method of making a glucosamine composition comprising:

(a) providing a source of chitin-containing fungal biomass having cells with cell walls and containing proteins, lipids and/or polysaccharides in the cells;

(b) pretreating the fungal biomass breaking down the cell walls of the fungal biomass and releasing the proteins, lipids and/or polysaccharides in liquid form without converting a significant amount of chitin to glucosamine utilizing one or more of the following pretreatments,

(i) pretreating the chitin-containing fungal biomass with a first acidic solution comprising HCl at a concentration of from about 0.05 to about 20% acid;

(ii) pretreating the chitin-containing fungal biomass with an alkaline solution prior to breaking down of the cell walls with the first acidic solution;

(iii) pretreating the fungal biomass mechanically to break down the cell walls;

(c) separating solids from the proteins, lipids and/or polysaccharides in liquid form;

(d) treating the separated solids with HCl to convert chitin therein to glucosamine; ~~and~~

(e) separating the glucosamine from the HCl; and

(f) forming the glucosamine into a food supplement composition.

50. (Currently amended) A method of obtaining glucosamine from fungal biomass comprising:

(a) providing a chitin-containing fungal biomass which fungal biomass has not been pretreated to release proteins, lipids and/or polysaccharides therein without converting a substantial amount of chitin to glucosamine;

(b) reacting the non-pretreated fungal biomass in a single acidic reaction step, wherein the acidic reaction comprises using about 20% HCl at a reaction temperature of from about 90°C to about 160°C to convert at least about 50% of the chitin in the fungal biomass to glucosamine during said reaction; and

(c) separating the glucosamine from the HCl.